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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 09/814,344 | 03/21/2001 | Naiqian Lu | 16869C016900 | 3677 |
| 20350 | 7590 | 11/24/2003 | EXAMINER | |
| TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834 | | | PARSONS, CHARLES E | |
| | | ART UNIT | PAPER NUMBER | |
| | | 2613 | | |
| DATE MAILED: 11/24/2003 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-------------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/814,344 | LU, NAIQIAN |
| | Examiner Charles E Parsons | Art Unit 2613 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

4) Claim(s) 1-25 is/are pending in the application.

- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.

5) Claim(s) ____ is/are allowed.

6) Claim(s) 1-25 is/are rejected.

7) Claim(s) ____ is/are objected to.

8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. ____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) Interview Summary (PTO-413) Paper No(s). ____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of Rodriguez PN 6016163.

Claims 1, 11 and 20: A method for video compression by comparing a first frame of video information against a second frame of video information, comprising:
identifying a reference frame contained in said first frame; (See Sun figure 2 note that the previous frame is the reference frame.)
storing said second frame in a first memory; (In order to compare frames storage is inherent.)
defining a search area in said second frame, said search area comprising data points in said second frame, said search area including plural search points; (See Sun figures 12 and 13)
comparing said reference block to search points contained in said second memory;
determining a first level search point based at least on said step of comparing; (See Sun column 2 lines 41-58)
defining a refined search area centered about said first level search point, See Sun figure 4.)
said refined search area being contained in said search area; and (See sun figure 4)
performing a local search on said refined search area. (See Sun figure 4 note the smaller search areas are centered around the points with minimum SAD.)

storing at least a portion of said search area into a second memory, including one or more of said search points. (While it is well understood in the art that video processing is memory intensive, Sun is silent as to how his apparatus is configured. However, at the time the invention was made, it was well known to those of ordinary skill in the art that block searching was not only memory intensive but also a task well suited for digital signal processors as taught by Rodriguez. See Rodriguez column 5 38-49. Furthermore, Rodriguez teaches that portions of the search windows can be stored and searched within the on board memory as required by the claims. Therefore, it would have been obvious to one of ordinary skill in the art, to provide the necessary memory so as to have available the data needed to perform a proper search, motivated by the knowledge gleaned from Rodriguez that DSP's provide a fast and efficient means for performing block matching tasks.)

Claim 2, 23: The method of claim 1 wherein said determining further includes performing a comparison of said reference block with at least one search point that is stored in a memory that is external to said DSP. (See Rodriguez figure 2)

Claim 3, 12: The method of claim 1 wherein said local search includes providing a second search window centered about said first level search point, said second search window defining a refined search area contained within said search area of said current frame. (See Sun figure 4)

Claim 4, 13: The method of claim 3 wherein said loading a second frame portion is performed if said refined search area includes data points not contained in said first frame portion. (See figure 4 of Sun, it appears as though the second search area contains points not included in the first search area.

Claim 5, 22: The method of claim 1 wherein the first, second, and third memory portions are portions of an on-chip memory of said DSP. (See figure 2 of Rodriguez, note that the memory is divided into multiple memory portions.)

Claim 6: The method of claim 1 wherein said third memory portion is contained within said second memory portion. (See figure 2 of Rodriguez, note that the memory is divided into multiple memory portions.)

Claim 7: The method of claim 1 wherein said performing comparisons includes producing motion vectors. (See Sun figure 4 the result of the search is the production of a motion vector.)

Claim 8, 17, 25: The method of claim 7 wherein said first level search point is determined based on said motion vectors. (See sun figure 4)

Claim 9, 18: The method of claim 1 wherein said performing comparisons include calculating sum of absolute difference values. (See Sun column 4 lines 62-65)

Claim 10, 19: The method of claim 1 wherein the entirety of said search area is loaded into said second memory portion. (See Rodriguez column 6 lines 4-7)

Claim 14: The method of claim 11 further including an additional step of comparing said reference block to search points which are contained in said first memory and which are not contained in said second memory, said determining further based on said additional step of comparing. (See Sun figure 4)

Claim 15: The method of claim 11 wherein said steps are performed in a digital signal processor. (See column 5 lines 22-25 of Rodriguez.)

Claim 16, 21, 24. The method of claim 15 wherein said first memory is external to said digital signal processor and said second memory is an on-chip memory contained in said digital signal processor. (See Rodriguez figure 2)

Application/Control Number: 09/814,344

Page 5

Art Unit: 2613

ANDY RAO
PRIMARY EXAMINER
